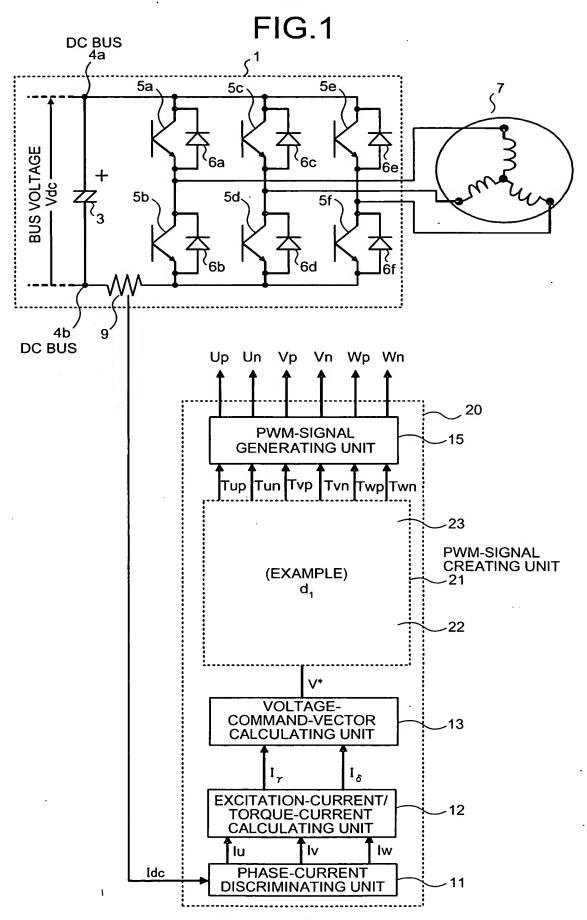
INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

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APPLN. FILING DATE: MAY 26, 2006
TITLE: THREE-PHASE PWM-SIGNAL GENERATING APPARATUS
INVENTOR(S): KOICHI ARISAWA ET AL.
ATTY. DKT. No.: 1032404-000147
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FIG.2A

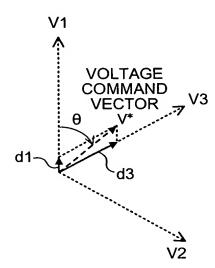


FIG.2B

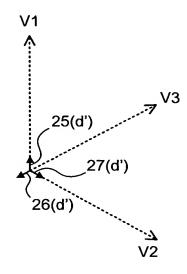
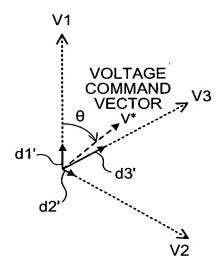
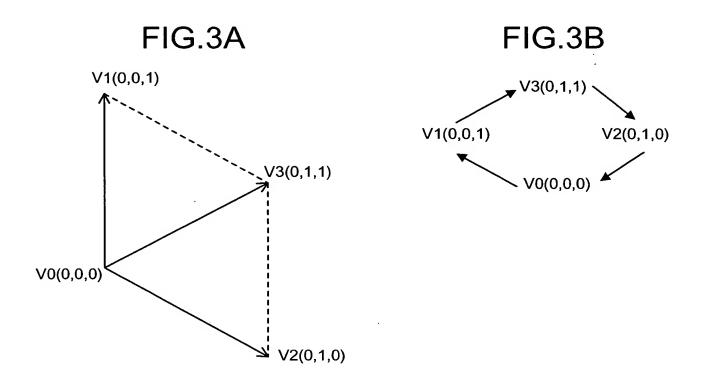


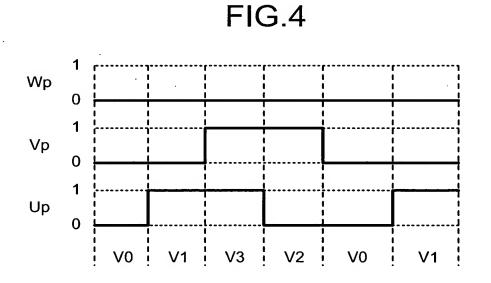
FIG.2C



INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

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INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

**SHEET 4 OF 25** 

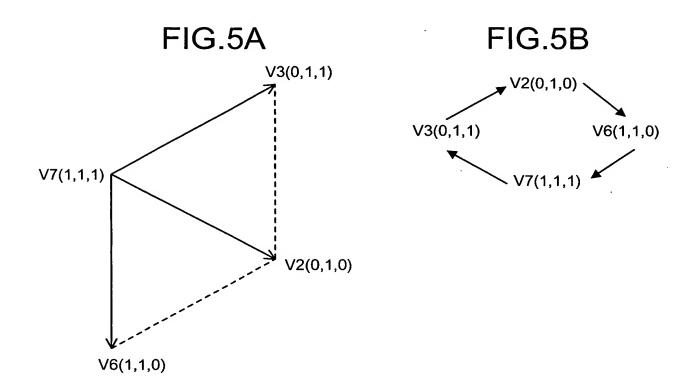
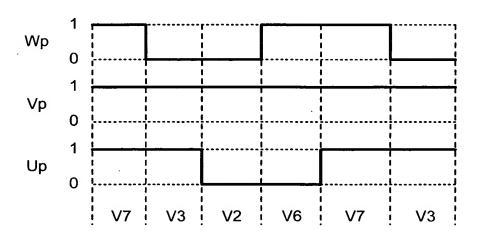
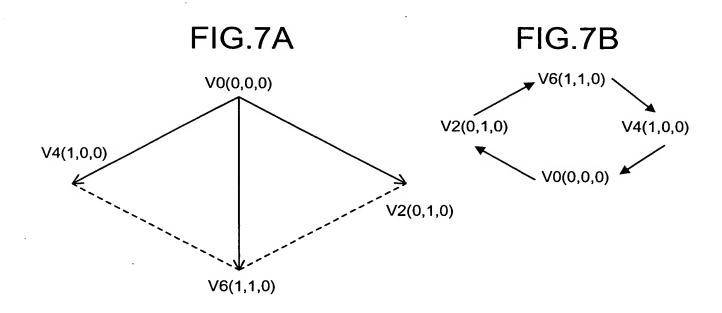


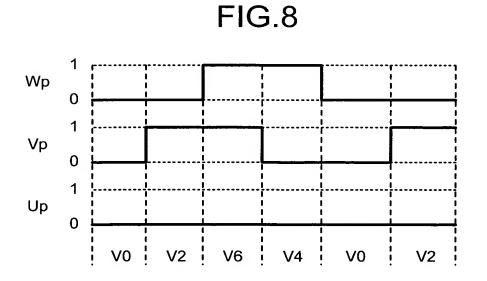
FIG.6



INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

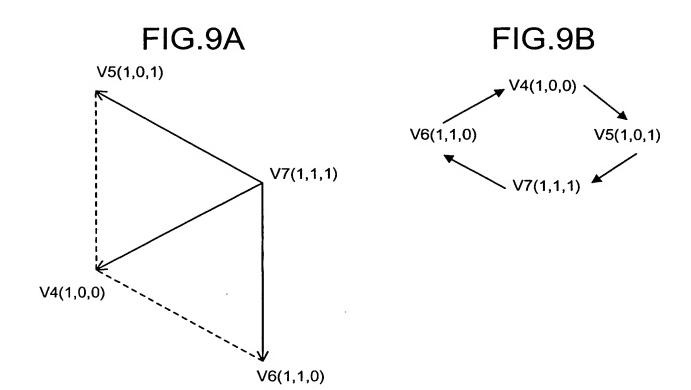
**SHEET 5 OF 25** 



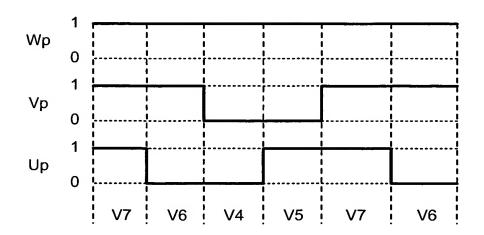


INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

**SHEET 6 OF 25** 

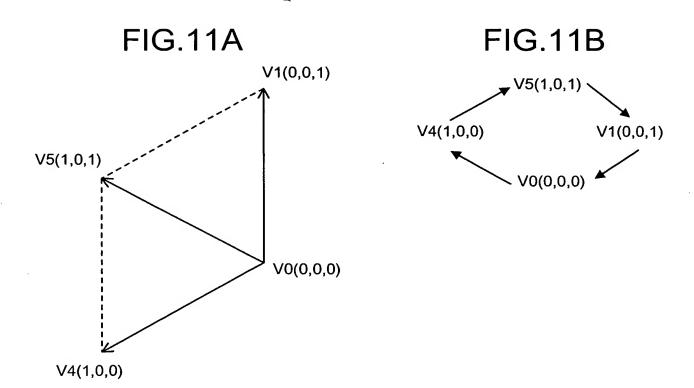


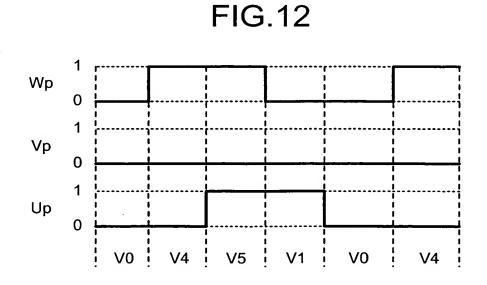
**FIG.10** 



INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

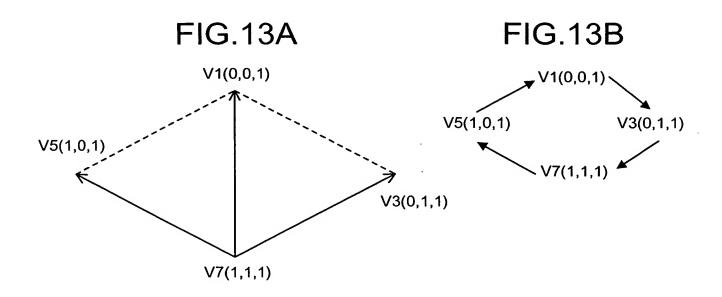
**SHEET 7 OF 25** 

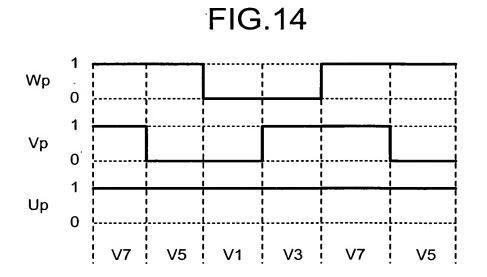




INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

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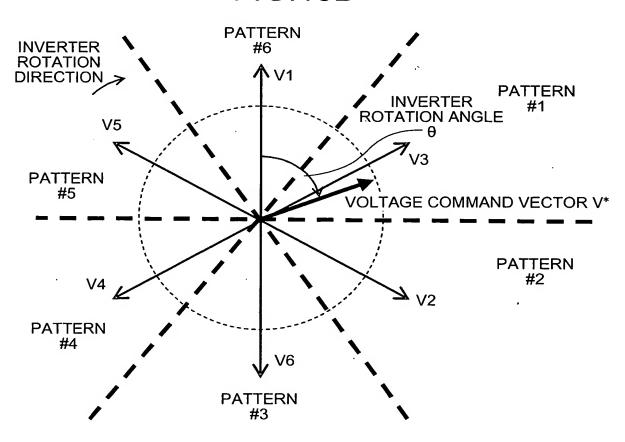
INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

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FIG.15A

INVERTER ROTATION ANGLE	PATTERN		
0°≦ θ ≦30°	#6		
30°≦ θ ≦90°	#1		
90°≦ θ ≦150°	#2		
150°≦ <i>θ</i> ≦210°	#3		
210°≦ θ ≦270°	#4		
270°≦ θ ≦330°	#5		
330°≦ θ ≦360°	#6		

FIG.15B



TITLE: THREE-PHASE PWM-SIGNAL GENERATING

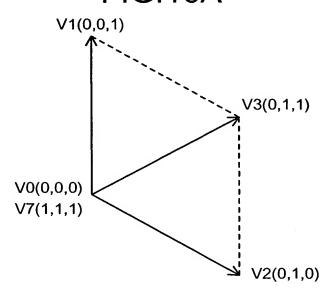
**APPARATUS** 

INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

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FIG.16A



## FIG.16B

- (a) V7 ⇔ V3 ⇔ V1 ⇔ V0 ⇔ V2
- (b) V7 ⇔ V3 ⇔ V1 ⇔ V0 ⇔ V2 ⇔ V3
- (c) V7 ⇔ V3 ⇔ V2 ⇔ V0 ⇔ V1
- (d)  $V7 \Rightarrow V3 \Rightarrow V2 \Rightarrow V0 \Rightarrow V1 \Rightarrow V3$

FIG.17A

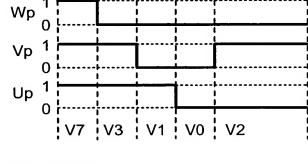
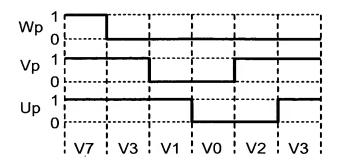


FIG.17B



**FIG.17C** 

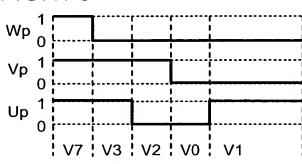
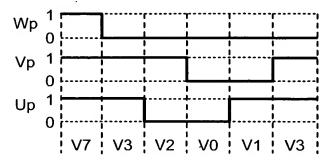


FIG.17D



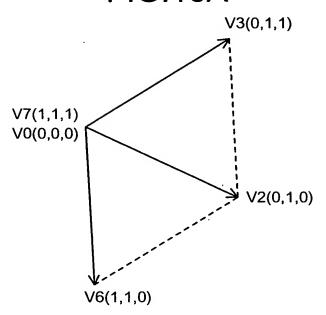
**APPARATUS** 

INVENTOR(S): KOICHI ARISAWA ET AL. Y. DKŤ. Ńo.: 1032404-000147

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FIG.18A



# FIG.18B

(b) 
$$V7 \Rightarrow V3 \Rightarrow V2 \Rightarrow V0 \Rightarrow V2 \Rightarrow V6$$

(d) 
$$V7 \Rightarrow V6 \Rightarrow V2 \Rightarrow V0 \Rightarrow V2 \Rightarrow V3$$

FIG.19A

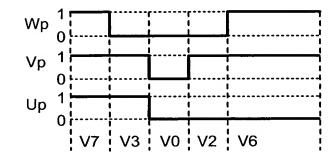
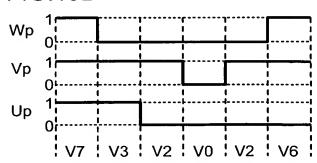


FIG.19B



**FIG.19C** 

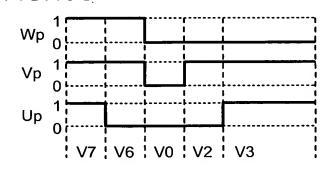
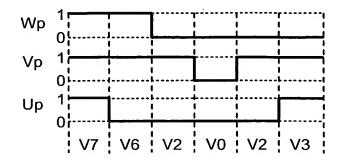


FIG.19D



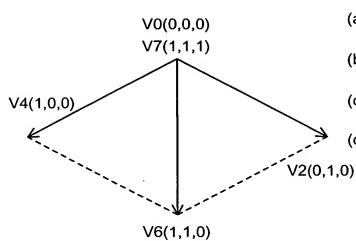
**APPARATUS** 

INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

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FIG.20A



## FIG.20B

- (a) V7 ⇒ V6 ⇒ V2 ⇒ V0 ⇒ V4
- (b) V7 ⇒ V6 ⇒ V2 ⇒ V0 ⇒ V4 ⇒ V6
- (c) V7 ⇒ V6 ⇒ V4 ⇒ V0 ⇒ V2
- (d)  $V7 \Rightarrow V6 \Rightarrow V4 \Rightarrow V0 \Rightarrow V2 \Rightarrow V6$

FIG.21A

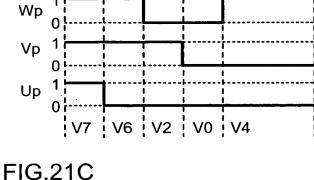
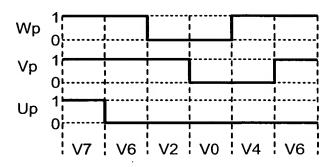


FIG.21B



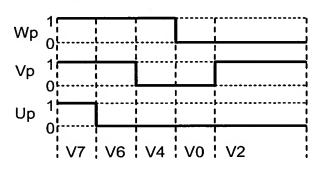
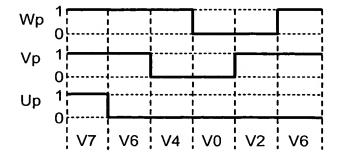


FIG.21D



TITLE: THREE-PHASE PWM-SIGNAL GENERATING

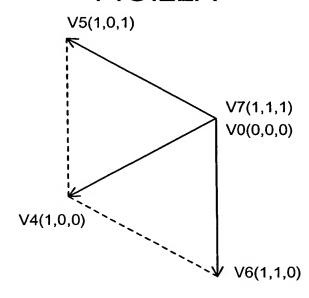
APPARATUS

INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

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FIG.22A



#### FIG.22B

- (b) V7 ⇒ V6 ⇒ V4 ⇒ V0 ⇒ V4 ⇒ V5
- (c) V7 ⇔ V5 ⇔ V0 ⇔ V4 ⇔ V6
- (d)  $V7 \Leftrightarrow V5 \Leftrightarrow V4 \Leftrightarrow V0 \Leftrightarrow V4 \Leftrightarrow V6$

FIG.23A

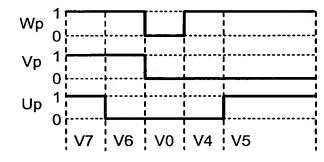


FIG.23B

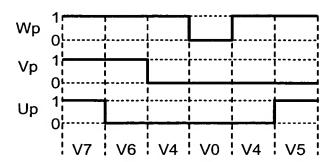


FIG.23C

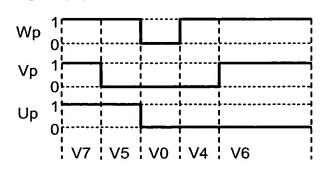
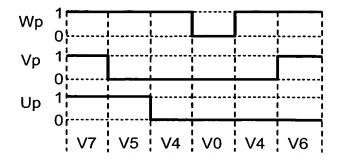


FIG.23D



TITLE: THREE-PHASE PWM-SIGNAL GENERATING

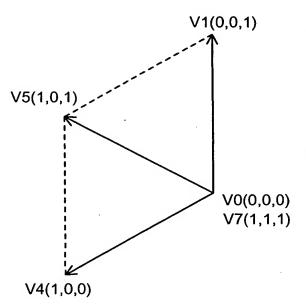
**APPARATUS** 

INVENTOR(S): KOICHI ARISAWA ET AL.

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FIG.24A



### FIG.24B

- (a) V7 ⇒ V5 ⇒ V4 ⇒ V0 ⇒ V1
- (b) V7 ♀ V5 ♀ V4 ♀ V0 ♀ V1 ♀ V5
- (c) V7 ⇔ V5 ⇔ V1 ⇔ V0 ⇔ V4
- (d) V7 ⇔ V5 ⇔ V1 ⇔ V0 ⇔ V4 ⇔ V5

FIG.25A

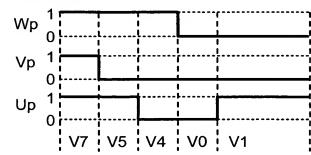


FIG.25B

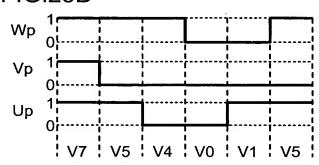


FIG.25C

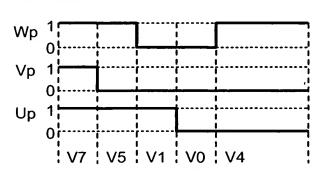
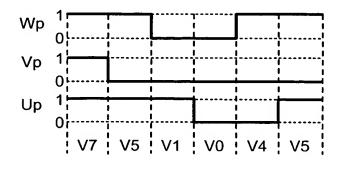


FIG.25D



TITLE: THREE-PHASE PWM-SIGNAL GENERATING

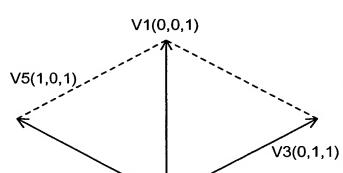
**APPARATUS** 

INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

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FIG.26A



V7(1,1,1) V0(0,0,0)

## FIG.26B

- (a) V7 ⇔ V5 ⇔ V0 ⇔ V1 ⇔ V3
- (b) V7 ⇔ V5 ⇔ V1 ⇔ V0 ⇔ V1 ⇔ V3

FIG.27A

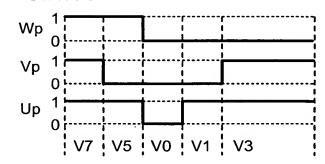


FIG.27B

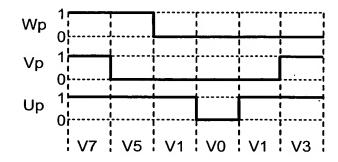


FIG.27C

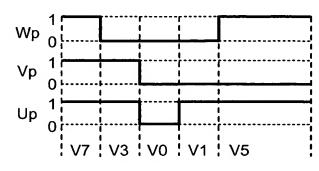
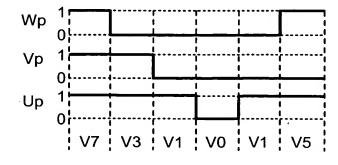


FIG.27D



APPLN. FILING DATE: MAY 26, 2006
TITLE: THREE-PHASE PWM-SIGNAL GENERATING APPARATUS
INVENTOR(S): KOICHI ARISAWA ET AL.
ATTY. DKT. No.: 1032404-000147
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FIG.28A

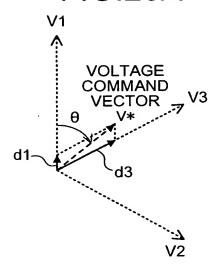


FIG.28B

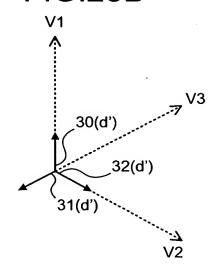
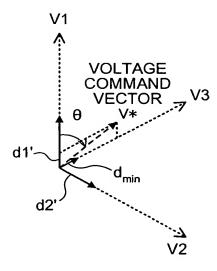


FIG.28C



INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

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FIG.29A

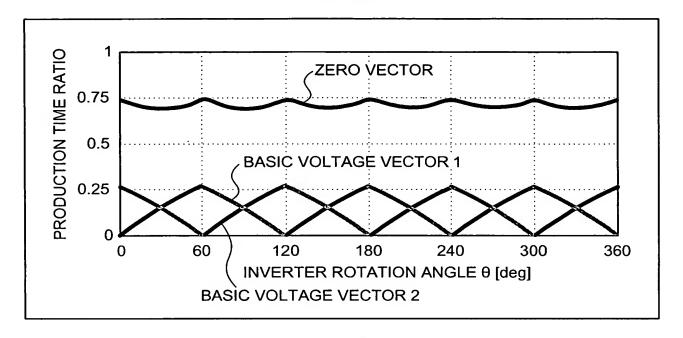
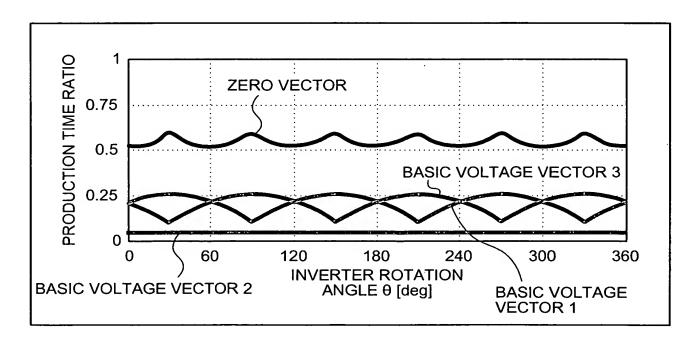


FIG.29B



APPLN. FILING DATE: MAY 26, 2006
TITLE: THREE-PHASE PWM-SIGNAL GENERATING APPARATUS
INVENTOR(S): KOICHI ARISAWA ET AL.
ATTY. DKT. No.: 1032404-000147
SHEET 18 0 **SHEET 18 OF 25** 

FIG.30A

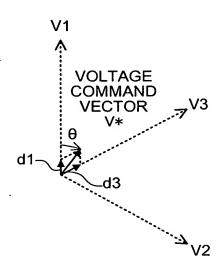


FIG.30B

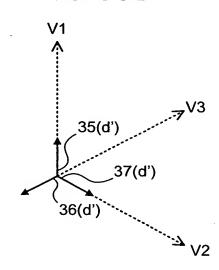
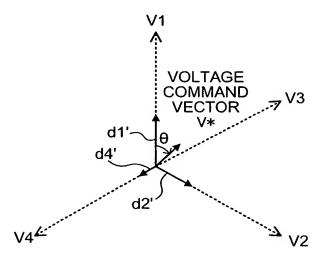
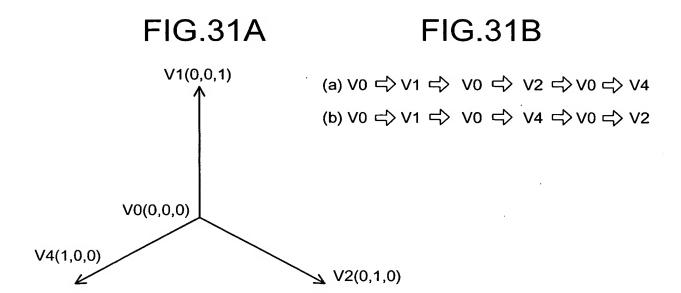


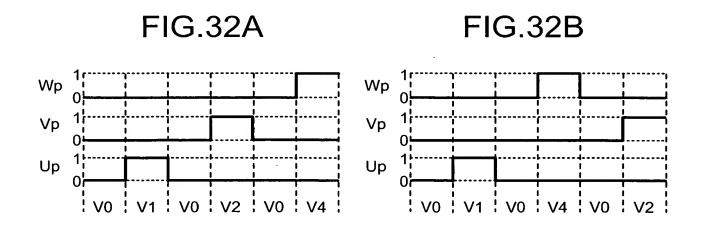
FIG.30C



INVENTOR(S): KOICHI ARISAWA ET AL.

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TITLE: THREE-PHASE PWM-SIGNAL GENERATING

**APPARATUS** 

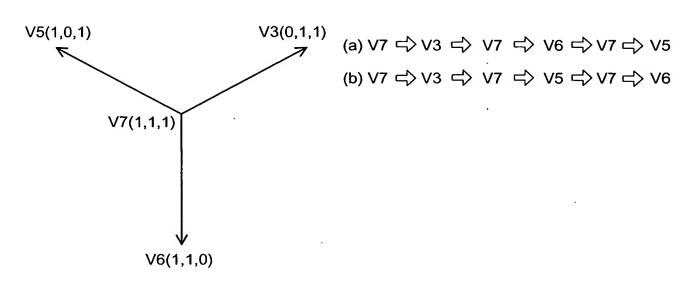
INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

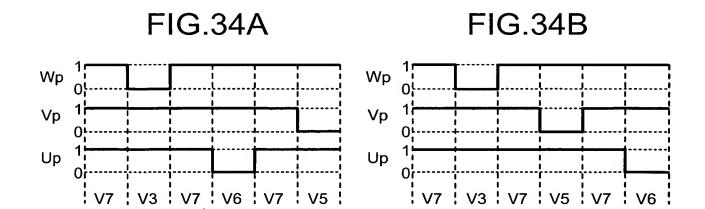
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FIG.33A

# FIG.33B





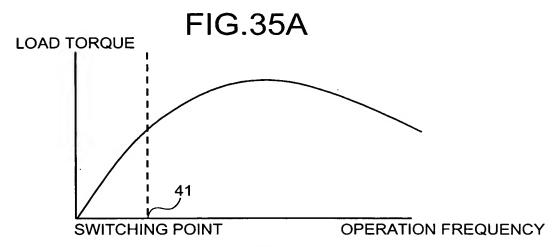
TITLE: THREE-PHASE PWM-SIGNAL GENERATING

APPARATUS

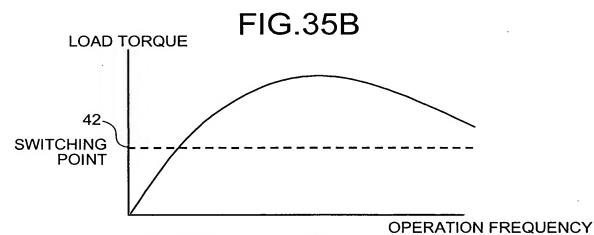
INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

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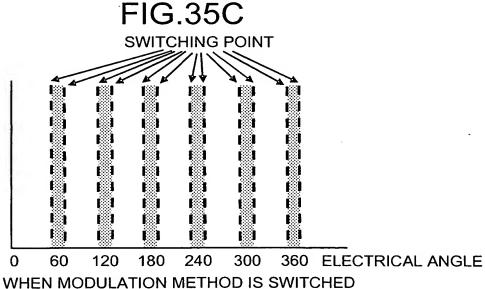
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WHEN MODULATION METHOD IS SWITCHED ACCORDING TO FREQUENCY



WHEN MODULATION METHOD IS SWITCHED ACCORDING TO LOAD TORQUE



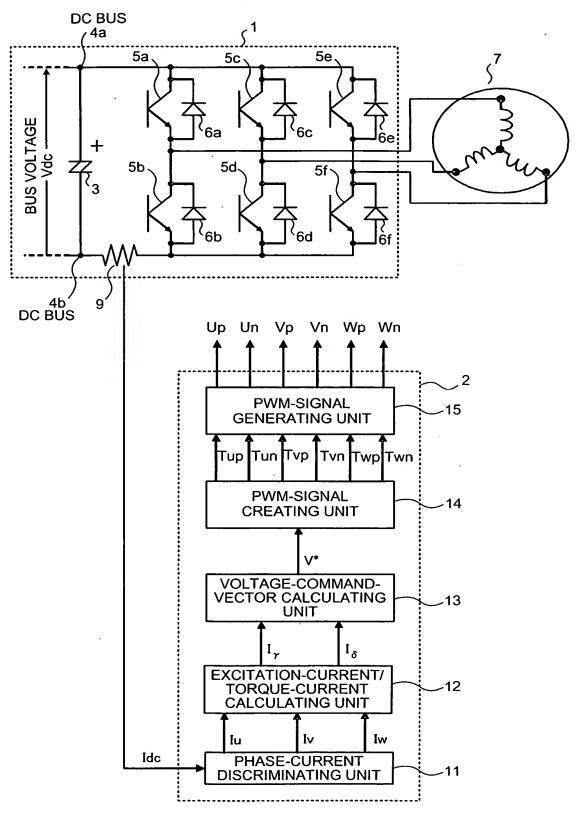
WHEN MODULATION METHOD IS SWITCHED ACCORDING TO ELECTRICAL ANGLE

**APPARATUS** 

INVENTOR(S): KOICHI ARISAWA ET AL. ATTY. DKT. No.: 1032404-000147

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**FIG.36** 



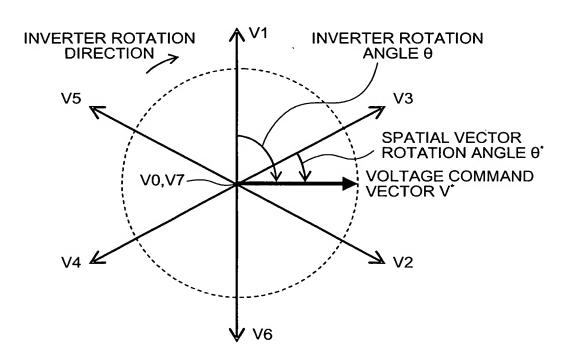
APPLN. FILING DATE: MAY 26, 2006
TITLE: THREE-PHASE PWM-SIGNAL GENERATING APPARATUS
INVENTOR(S): KOICHI ARISAWA ET AL.
ATTY. DKT. No.: 1032404-000147
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FIG.37

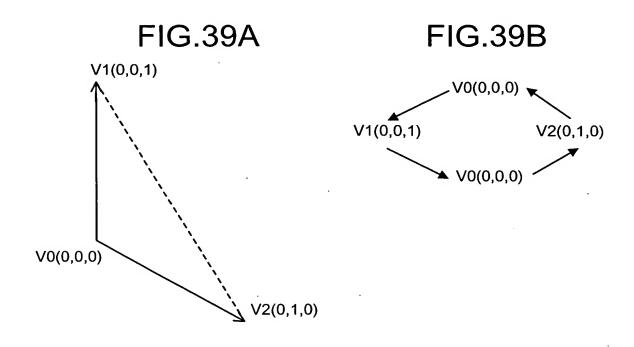
BASIC VOLTAGE VECTOR	Wp (W-PHASE POSITIVE SIDE SWITCHING ELEMENT LOGICAL STATE)	Vp (V-PHASE POSITIVE SIDE SWITCHING ELEMENT LOGICAL STATE)	Up (U-PHASE POSITIVE SIDE SWITCHING ELEMENT LOGICAL STATE)	OBSERVABLE PHASE CURRENT
VO	0	0	0	OBSERVATION IMPOSSIBLE
V1	0	0	1	lu
V2	0	1	0	lv
V3	0	1	1	-lw
V4	1	0	0	lw
V5	1	0	1	-lv
V6	1	1	0	-lu
V7	1	1	1	OBSERVATION IMPOSSIBLE

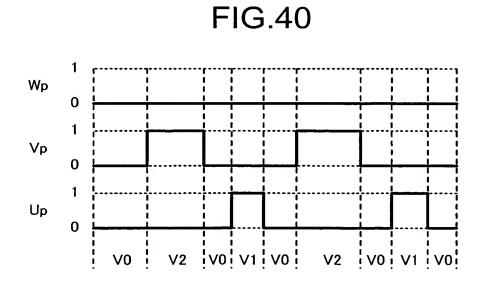
**FIG.38** 



APPARATUS
INVENTOR(S): KOICHI ARISAWA ET AL.
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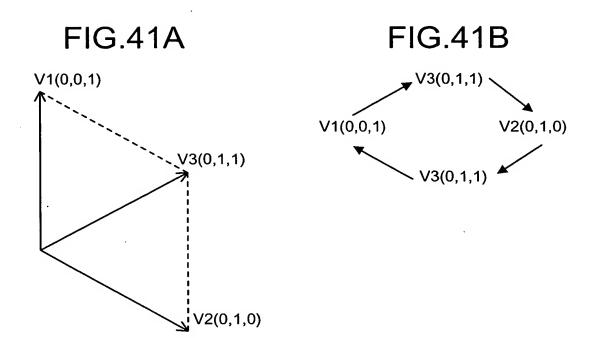
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**FIG.42** 

